

## CLAIMS

What is claimed is:

- 5 1. A method for transmit power control of transmitting wireless device, the method comprises:

transmitting, by the transmitting wireless device, a packet  
to a targeted wireless device via a wireless channel at a  
10 first power level;

determining, by the targeted wireless device, signal  
strength of the packet received via the wireless channel to  
produce a determined signal strength;

- 15 determining, by the targeted wireless device, adequacy of  
the first power level based on the determined signal  
strength;

- 20 when the first power level is not adequate, determining, by  
the targeted wireless device, a second power level for the  
transmitting wireless device based on the determination of  
the adequacy of the first power level; and

- 25 transmitting, by the targeted wireless device, a packet  
indicating the second power level to the transmitting  
wireless device via the wireless channel.

- 30 2. The method of claim 1, wherein the transmitting the  
packet further comprises:

transmitting the packet to include an indicated power level of transmission by the transmitting wireless device.

3. The method of claim 2, wherein the determining the  
5 signal strength, determining the adequacy of the first power level, and determining the second power level further comprise:

10 receiving a radio frequency signal modulated to carry the packet;

determining received signal strength indicator (RSSI) of the radio frequency signal to produce an RSSI;

15 converting the radio frequency signal into a baseband signal;

demodulating the baseband signal to recapture data;

20 computing accuracy of the recaptured data;

separating the recaptured data to isolate the indicated power level of transmission from data;

25 analyzing the RSSI and the accuracy of the recaptured data to produce the adequacy of the first power level;

generating the second power level to be greater than the first power level when the RSSI or accuracy of the  
30 recaptured data are below corresponding minimum performance thresholds; and

generating the second power level to be less than the first power level when the RSSI and the accuracy of the recaptured data are above acceptable performance thresholds.

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4. The method of claim 1, wherein the determining the signal strength, determining the adequacy of the first power level, and determining the second power level further comprise:

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transmitting, by the targeted wireless device, a request for identifying the first power level to the transmitting wireless device;

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receiving a radio frequency signal modulated to carry the packet;

determining received signal strength indicator (RSSI) of the radio frequency signal to produce an RSSI;

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converting the radio frequency signal into a baseband signal;

demodulating the baseband signal to recapture data;

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computing accuracy of the recaptured data;

separating the recaptured data to isolate the indicated power level of transmission from data;

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analyzing the RSSI and the accuracy of the recaptured data to produce the adequacy of the first power level;

generating the second power level to be greater than the first power level when the RSSI or accuracy of the recaptured data are below corresponding minimum performance thresholds; and

generating the second power level to be less than the first power level when the RSSI and the accuracy of the recaptured data are above acceptable performance thresholds.

5. The method of claim 1 further comprises:

providing, by the transmitting wireless device, an acknowledgement of receipt of the second power level to the targeted wireless device; and

providing, by the transmitting wireless device, an indication of power level adjustment from the first power level to the second power level to the targeted wireless device.

6. The method of claim 1 further comprises:

transmitting, by a station as the transmitting wireless device, the packet to an access point via a wireless channel at a first power level within an 802.11 wireless network;

determining, by the access point as the targeted wireless device, the signal strength of the packet, the adequacy of

the first power level, and the second power level when the first power level is not adequate.

7. The method of claim 1 further comprises:

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transmitting, by an access point as the transmitting wireless device, the packet to a station via a wireless channel at a first power level within an 802.11 wireless network;

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determining, by the station as the targeted wireless device, the signal strength of the packet, the adequacy of the first power level, and the second power level when the first power level is not adequate.

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8. A method for transmit power control of transmitting wireless device, the method comprises:

transmitting, by the transmitting wireless device, a packet  
5 to a targeted wireless device via a wireless channel at a first power level;

determining, by the targeted wireless device, signal strength of the packet received via the wireless channel to  
10 produce a determined signal strength;

transmitting, by the targeted wireless device, the determined signal strength of the packet to transmitting wireless device,  
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determining, by the transmitting wireless device, adequacy of the first power level based on the determined signal strength;

20 when the first power level is not adequate, determining, by the transmitting wireless device, a second power level for the transmitting wireless device based on the determination of the adequacy of the first power level; and

25 adjusting, by the transmitting wireless device, transmit power from the first power level to the second power level when the first power level is not adequate.

9. The method of claim 8, wherein the determining the  
30 signal strength, determining the adequacy of the first power level, and determining the second power level further comprise:

receiving, by the targeted wireless device, a radio frequency signal modulated to carry the packet;

- 5 determining, by the targeted wireless device, received signal strength indicator (RSSI) of the radio frequency signal to produce an RSSI;

- converting, by the targeted wireless device, the radio  
10 frequency signal into a baseband signal;

demodulating, by the targeted wireless device, the baseband signal to recapture data;

- 15 computing, by the targeted wireless device, accuracy of the recaptured data;

- separating, by the targeted wireless device, the recaptured data to isolate the indicated power level of transmission  
20 from data;

providing, by the targeted wireless device, the RSSI and the accuracy of the recaptured data to the transmitting wireless device;

- 25 analyzing, by the transmitting wireless device, the RSSI and the accuracy of the recaptured data to produce the adequacy of the first power level;

- 30 generating, by the transmitting wireless device, the second power level to be greater than the first power level when

the RSSI or accuracy of the recaptured data are below corresponding minimum performance thresholds; and

generating, by the transmitting wireless device, the second  
5 power level to be less than the first power level when the RSSI and the accuracy of the recaptured data are above acceptable performance thresholds.

10. The method of claim 8 further comprises:

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providing, by the transmitting wireless device, an indication of power level adjustment from the first power level to the second power level to the targeted wireless device.

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11. The method of claim 8 further comprises:

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transmitting, by a station as the transmitting wireless device, the packet to an access point via a wireless channel at a first power level within an 802.11 wireless network;

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determining, by the access point as the targeted wireless device, the signal strength of the packet and the adequacy of the first power level; and

determining, by the station, the second power level when the first power level is not adequate.

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12. The method of claim 8 further comprises:



transmitting, by an access point as the transmitting wireless device, the packet to a station via a wireless channel at a first power level within an 802.11 wireless network;

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determining, by the station as the targeted wireless device, the signal strength of the packet and the adequacy of the first power level; and

10 determining, by the access point, the second power level when the first power level is not adequate.

transmitting, by an access point as the transmitting wireless device, the packet to a station via a wireless channel at a first power level within an 802.11 wireless network;

13. A wireless communication network that includes a plurality of basic service sets, wherein each of the plurality of basic service sets comprises:

5 access point (AP); and

plurality of stations, wherein the access point includes an AP processing module and AP memory, wherein the AP memory includes operational instructions that cause the AP

10 processing module to:

receive a packet from one of the plurality of stations  
a wireless channel at a first power level;

15 determine signal strength of the packet received via  
the wireless channel to produce a determined signal  
strength;

20 determine adequacy of the first power level based on  
the determined signal strength;

25 determine a second power level for the one of the  
plurality of stations based on the determination of  
the adequacy of the first power level when the first  
power level is not adequate; and

30 transmit a packet indicating the second power level to  
the one of the plurality of stations via the wireless  
channel; and

wherein each of the plurality of stations (STA) includes a  
STA processing module and STA memory, wherein the STA

memory includes operational instructions that cause the STA processing module to:

5       transmit the packet to the access point via the wireless channel at the first power level;

      provide an acknowledgement of receipt of the second power level to the access point; and

10       provide an indication of power level adjustment from the first power level to the second power level to the access point.

14. The wireless communication network of claim 13,  
15       wherein the STA memory further comprises operational instructions that cause the one of the plurality of stations to transmit the packet by:

20       transmitting the packet to include an indicated power level of transmission to identify the first power level.

15. The wireless communication network of claim 14, wherein the access point further comprises:

25       radio receiver operably coupled to receive a radio frequency signal modulated to carry the packet, wherein the radio receiver determines received signal strength indicator (RSSI) of the radio frequency signal to produce an RSSI, converts the radio frequency signal into a  
30       baseband signal, and demodulates the baseband signal to recapture data;

wherein the AP memory further includes operational instructions that cause the access point to determine the adequacy of the first power level and determine the second power level by:

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computing accuracy of the recaptured data;

separating the recaptured data to isolate the indicated power level of transmission from data;

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analyzing the RSSI and the accuracy of the recaptured data to produce the adequacy of the first power level;

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generating the second power level to be greater than the first power level when the RSSI or accuracy of the recaptured data are below corresponding minimum performance thresholds; and

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generating the second power level to be less than the first power level when the RSSI and the accuracy of the recaptured data are above acceptable performance thresholds.

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16. The wireless communication network of claim 13, wherein the access point further comprises:

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radio transmitter operably coupled to transmit a request for identifying the first power level to the one of the plurality of stations;

radio receiver operably coupled to receive a radio frequency signal modulated to carry the packet and the

indication of the first power level, wherein the radio receiver determines received signal strength indicator (RSSI) of the radio frequency signal to produce an RSSI, converts the radio frequency signal into a baseband signal, and demodulates the baseband signal to recapture data;

wherein the AP memory further includes operational instructions that cause the access point to determine the adequacy of the first power level and determine the second power level by:

computing accuracy of the recaptured data;

separating the recaptured data to isolate the indicated power level of transmission from data;

analyzing the RSSI and the accuracy of the recaptured data to produce the adequacy of the first power level;

generating the second power level to be greater than the first power level when the RSSI or accuracy of the recaptured data are below corresponding minimum performance thresholds; and

generating the second power level to be less than the first power level when the RSSI and the accuracy of the recaptured data are above acceptable performance thresholds.

17. The wireless communication network of claim 13, wherein the STA memory further comprises operational

instructions that cause the STA processing module of the one of the plurality of stations to:

5 receive a second packet from the access point via the wireless channel at a third power level;

determine signal strength of the second packet received via the wireless channel to produce a second determined signal strength;

10 determine adequacy of the third power level based on the second determined signal strength;

15 determine a fourth power level for the access point based on the determination of the adequacy of the third power level when the third power level is not adequate; and

20 transmit a packet indicating the fourth power level to the access point via the wireless channel; and

wherein AP memory further includes operational instructions that cause the AP processing module to:

25 transmit the second packet to the one of the plurality of stations via the wireless channel at the third power level;

30 provide an acknowledgement of receipt of the fourth power level to the one of the plurality of stations; and

provide an indication of power level adjustment from the third power level to the fourth power level to the one of the plurality of stations.

5 18. The wireless communication network of claim 17, wherein the AP memory further comprises operational instructions that cause the AP processing module to transmit the packet by:

10 transmitting the second packet to include an indicated power level of transmission to indicate the third power level.

15 19. The wireless communication network of claim 14, wherein the one of the plurality of stations further comprises:

20 radio receiver operably coupled to receive a second radio frequency signal modulated to carry the second packet, wherein the radio receiver determines received signal strength indicator (RSSI) of the second radio frequency signal to produce second RSSI, converts the second radio frequency signal into a second baseband signal, and demodulates the second baseband signal to recapture second data;

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wherein the STA memory further includes operational instructions that cause the one of the plurality of stations to determine the adequacy of the third power level and determine the fourth power level by:

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computing accuracy of the recaptured second data;

separating the recaptured second data to isolate the indicated power level of transmission from data;

- 5 analyzing the second RSSI and the accuracy of the recaptured second data to produce the adequacy of the third power level;

- 10 generating the fourth power level to be greater than the third power level when the second RSSI or the accuracy of the recaptured second data are below corresponding minimum performance thresholds; and

- 15 generating the fourth power level to be less than the third power level when the second RSSI and the accuracy of the recaptured second data are above acceptable performance thresholds.

- 20 20. The wireless communication network of claim 17, wherein the one of the plurality of stations further comprises:

- 25 radio transmitter operably coupled to transmit a request for identifying the third power level to the access point;

- radio receiver operably coupled to receive a second radio frequency signal modulated to carry the second packet and the indication of the third power level, wherein the radio receiver determines received signal strength indicator (RSSI) of the radio frequency signal to produce second RSSI, converts the second radio frequency signal into a
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second baseband signal, and demodulates the second baseband signal to recapture second data;

5 wherein the STA memory further includes operational instructions that cause the one of the plurality of stations to determine the adequacy of the third power level and determine the fourth power level by:

computing accuracy of the recaptured second data;

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separating the recaptured second data to isolate the indicated power level of transmission from data;

15

analyzing the second RSSI and the accuracy of the recaptured second data to produce the adequacy of the third power level;

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generating the fourth power level to be greater than the third power level when the second RSSI or the accuracy of the recaptured second data are below corresponding minimum performance thresholds; and

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generating the fourth power level to be less than the third power level when the second RSSI and the accuracy of the recaptured second data are above acceptable performance thresholds.

21. A wireless communication network that includes a plurality of basic service sets, wherein each of the plurality of basic service sets comprises:

5 access point (AP); and

plurality of stations, wherein the access point includes an AP processing module and AP memory, wherein the AP memory includes operational instructions that cause the AP  
10 processing module to:

receive a packet from one of the plurality of stations via a wireless channel at a first power level;

15 determine signal strength of the packet received via the wireless channel to produce a determined signal strength;

20 transmit the determined signal strength of the packet to the one of the plurality of stations;

wherein each of the plurality of stations (STA) includes a STA processing module and STA memory, wherein the STA memory includes operational instructions that cause the STA  
25 processing module to:

transmit the packet to the access point via a wireless channel at the first power level;

30 determine adequacy of the first power level based on the determined signal strength;

determine a second power level based on the determination of the adequacy of the first power level when the first power level is not adequate; and

- 5        adjust transmit power from the first power level to the second power level when the first power level is not adequate.

22. The wireless communication network of claim 21,  
10        wherein the access point further comprises:

radio receiver operably coupled to receive a radio frequency signal modulated to carry the packet, wherein the radio receiver determines received signal strength  
15        indicator (RSSI) of the radio frequency signal to produce an RSSI, converts the radio frequency signal into a baseband signal, and demodulates the baseband signal to recapture data;

20        wherein the AP memory further includes operational instructions that cause the access point to determine the adequacy of the first power level by:

25        computing accuracy of the recaptured data;  
providing the RSSI and the accuracy of the recaptured data to the transmitting wireless device;

wherein the STA memory further includes operational  
30        instructions that cause the STA processor to determine the adequacy of the first power level and to determine the second power level by:

analyzing the RSSI and the accuracy of the recaptured data to produce the adequacy of the first power level;

5       generating the second power level to be greater than the first power level when the RSSI or accuracy of the recaptured data are below corresponding minimum performance thresholds; and

10       generating the second power level to be less than the first power level when the RSSI and the accuracy of the recaptured data are above acceptable performance thresholds.

15       23. The wireless communication network of claim 21, wherein the STA memory further comprises operational instructions that cause the STA processing module to:

20       provide an indication of power level adjustment from the first power level to the second power level to the access point.

24. A station for use in a wireless communication network,  
the station (STA) comprises:

a STA processing module; and

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STA memory operably coupled to the STA processing module,  
wherein the STA memory includes operational instructions  
that cause the STA processing module to:

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transmit a packet to an access point of the wireless  
communication network via a wireless channel at a  
first power level;

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provide an acknowledgement of receipt of a second  
power level to the access point; and

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provide an indication of power level adjustment from  
the first power level to the second power level to the  
access point.

25. The station of claim 24, wherein the STA memory  
further comprises operational instructions that cause the  
STA processing module to transmit the packet by:

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transmitting the packet to include an indicated power level  
of transmission to identify the first power level.

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26. The station of claim 24, wherein the STA memory  
further comprises operational instructions that cause the  
STA processing module to:

receive a second packet from the access point via the wireless channel at a third power level;

5       determine signal strength of the second packet received via the wireless channel to produce a second determined signal strength;

10       determine adequacy of the third power level based on the second determined signal strength;

15       determine a fourth power level for the access point based on the determination of the adequacy of the third power level when the third power level is not adequate; and

20       transmit a packet indicating the fourth power level to the access point via the wireless channel.

27. The station of claim 26 further comprises:

20       radio receiver operably coupled to receive a second radio frequency signal modulated to carry the second packet, wherein the radio receiver determines received signal strength indicator (RSSI) of the second radio frequency  
25       signal to produce second RSSI, converts the second radio frequency signal into a second baseband signal, and demodulates the second baseband signal to recapture second data;

30       wherein the STA memory further includes operational instructions that cause the STA processing module to

determine the adequacy of the third power level and  
determine the fourth power level by:

computing accuracy of the recaptured second data;

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separating the recaptured second data to isolate the  
indicated power level of transmission from data;

analyzing the second RSSI and the accuracy of the

10 recaptured second data to produce the adequacy of the third  
power level;

generating the fourth power level to be greater than the  
third power level when the second RSSI or the accuracy of  
15 the recaptured second data are below corresponding minimum  
performance thresholds; and

generating the fourth power level to be less than the third  
power level when the second RSSI and the accuracy of the  
20 recaptured second data are above acceptable performance  
thresholds.

28. The station of claim 27 further comprises:

25 radio transmitter operably coupled to transmit a request  
for identifying the third power level to the access point  
and to transmit the packet.

29. An access point for use in a wireless communication network, the access point (AP) comprises:

an AP processing module; and

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AP memory operably coupled to the AP processing module, wherein the AP memory includes operational instructions that cause the AP processing module to:

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receive a packet from one of a plurality of stations of the wireless communication network via a wireless channel at a first power level;

15

determine signal strength of the packet received via the wireless channel to produce a determined signal strength;

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determine adequacy of the first power level based on the determined signal strength;

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determine a second power level for the one of the plurality of stations based on the determination of the adequacy of the first power level when the first power level is not adequate; and

transmit a packet indicating the second power level to the one of the plurality of stations via the wireless channel.

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30. The access point of claim 29 further comprises:



radio receiver operably coupled to receive a radio frequency signal modulated to carry the packet, wherein the radio receiver determines received signal strength indicator (RSSI) of the radio frequency signal to produce  
5 an RSSI, converts the radio frequency signal into a baseband signal, and demodulates the baseband signal to recapture data;

wherein the AP memory further includes operational  
10 instructions that cause the access point to determine the adequacy of the first power level and determine the second power level by:

computing accuracy of the recaptured data;

15 separating the recaptured data to isolate the indicated power level of transmission from data;

analyzing the RSSI and the accuracy of the recaptured data  
20 to produce the adequacy of the first power level;

generating the second power level to be greater than the first power level when the RSSI or accuracy of the recaptured data are below corresponding minimum performance  
25 thresholds; and

generating the second power level to be less than the first power level when the RSSI and the accuracy of the recaptured data are above acceptable performance  
30 thresholds.

31. The access point of claim 29 point further comprises:

radio transmitter operably coupled to transmit a request for identifying the first power level to the one of the plurality of stations;

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radio receiver operably coupled to receive a radio frequency signal modulated to carry the packet and the indication of the first power level, wherein the radio receiver determines received signal strength indicator (RSSI) of the radio frequency signal to produce an RSSI, converts the radio frequency signal into a baseband signal, and demodulates the baseband signal to recapture data;

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wherein the AP memory further includes operational instructions that cause the access point to determine the adequacy of the first power level and determine the second power level by:

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computing accuracy of the recaptured data;

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separating the recaptured data to isolate the indicated power level of transmission from data;

analyzing the RSSI and the accuracy of the recaptured data to produce the adequacy of the first power level;

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generating the second power level to be greater than the first power level when the RSSI or accuracy of the recaptured data are below corresponding minimum performance thresholds; and

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generating the second power level to be less than the first power level when the RSSI and the accuracy of the recaptured data are above acceptable performance thresholds.

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32. The access point of claim 29, wherein the AP memory further comprises operational instructions that cause the AP processing module to:

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transmit a second packet to the one of the plurality of stations via the wireless channel at the third power level;

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provide an acknowledgement of receipt of the fourth power level to the one of the plurality of stations; and

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provide an indication of power level adjustment from the third power level to the fourth power level to the one of the plurality of stations.

33. A station for use in a wireless communication network, the station (STA) comprises:

a STA processing module; and

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STA memory operably coupled to the STA processing module, wherein the STA memory includes operational instructions that cause the STA processing module to:

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transmit a packet to an access point of the wireless communication network via a wireless channel at the first power level;

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determine adequacy of the first power level based on a determined signal strength received from the access point;

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determine a second power level based on the determination of the adequacy of the first power level when the first power level is not adequate; and

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adjust transmit power from the first power level to the second power level when the first power level is not adequate.

34. The station of claim 33, wherein the STA memory further comprises operational instructions that cause the STA processor to determine the adequacy of the first power level and to determine the second power level by:

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receiving received signal strength indicator (RSSI)  
and accuracy of the recaptured data from the access  
point;

5 analyzing RSSI and the accuracy of the recaptured data  
to produce the adequacy of the first power level;

generating the second power level to be greater than  
the first power level when the RSSI or accuracy of the  
10 recaptured data are below corresponding minimum  
performance thresholds; and

generating the second power level to be less than the  
first power level when the RSSI and the accuracy of  
15 the recaptured data are above acceptable performance  
thresholds.

35. The station of claim 33, wherein the STA memory  
further comprises operational instructions that cause the  
20 STA processing module to:

provide an indication of power level adjustment from the  
first power level to the second power level to the access  
point.

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36. An access point for use in a wireless communication network, the access point (AP) comprises:

an AP processing module; and

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AP memory operably coupled to the AP processing module, wherein the AP memory includes operational instructions that cause the AP processing module to:

10 receive a packet from one of a plurality of stations of the wireless communication network via a wireless channel at a first power level;

15 determine signal strength of the packet received via the wireless channel to produce a determined signal strength; and

20 transmit the determined signal strength of the packet to the one of the plurality of stations.

37. The access point of claim 36 further comprises:

25 radio receiver operably coupled to receive a radio frequency signal modulated to carry the packet, wherein the radio receiver determines received signal strength indicator (RSSI) of the radio frequency signal to produce an RSSI, converts the radio frequency signal into a baseband signal, and demodulates the baseband signal to recapture data;

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wherein the AP memory further includes operational instructions that cause the access point to determine the adequacy of the first power level by:

- 5        computing accuracy of the recaptured data; and
- providing the RSSI and the accuracy of the recaptured data to the transmitting wireless device.

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